

Hail.—3rd, McPherson, Barracks, Ga.; 4th, Accotink, Va.; 8th, Fort Gibson, Ind. Ty.; 9th, Rupert, Pa.; 10th, Detroit, Mich.; 13th, Fort Wayne, Mich.; 14th, Cornish, Me.; 22nd, Sacramento, Cal.; 25th, Colorado Springs, Col., Guttenburg, Iowa, Neosha, Mo.; 26th, Fort Gibson, Ind. Ty., Lawrence, Kan., Great Bend, Kan., Cornish, Me., Standish, Me., Springfield, Mo.; Cincinnati, Ohio, Hillsboro, Ohio; 30th, Vevay, Ind., Asheville, N. C., Red Bluff, Cal.; 31st, Willet's Point, N. J., Sandy Springs, Md., Freehold, N. J., Linden, N. J., White Plains, N. Y., Flushing, N. Y., West Chester, Pa., Philadelphia, Pa., Accotink, Va.

Sleet.—1st, Rochester; Cresco, Iowa; Chicago. 2nd, Rochester; Cresco, Iowa. 3rd, Corsicana and Fredericksburg, Texas. 4th, West Point, N. Y.; Fayette, Miss.; Springfield, Mass.; Wood's Holl. 6th, Galveston. 7th, Jacksboro', Fredericksburg, Texas. 8th, Fort Gibson; McPherson Barracks, Ga.; Augusta; Fort Sill. 9th, Davenport; Detroit; Pembina; Guttenburg, Iowa; Cleveland; Westchester, Pa.; Baltimore. 10th, Detroit; Indianapolis; Louisville; Fort Prebble, Me.; Burlington, Vt.; Mt. Washington; Winnemucca. 11th, Erie; Fort Prebble, Me.; West Waterville, Me.; Mt. Washington. 13th, St. Louis; Cleaveland, Tenn. 14th, Toledo; Rochester; Fort Prebble, Me.; Bangor, Me. 17th, Camp Douglas, Utah; 18th, Camp Douglas, Utah; Galveston. 20th, Milwaukee. 22nd, Madison Barracks, N. Y.; Detroit. 23rd, New Bedford, Mass. 25th, Fort Prebble, Me. 26th, Sandusky; Fort Prebble, Me.; Madison Barracks, N. Y.; Albany. 27th, Oswego; Fort Prebble, Me. 28th, Oswego; Indianapolis. 29th, Leavenworth; Keokuk. 30th, Spartanburg, S. C.; Indianapolis; Louisville; Macon, Ga.; New Harmony, Ind.; Vevay, Ind.; Statesville, N. C.; Mt. Auburn, Ohio. 31st, Morgantown; Louisville; New Bedford, Mass.; Baltimore; Wood's Holl.

Depth of Snow at Close of Month.—In New England from 1 to 36 inches; in the Middle Atlantic States, 1.5 to 18; in the Upper Lakes, 0.5 to 11; in the Lower Lakes, 7 to 18; in Tennessee and the Ohio valley, 2 to 8; in Kansas, 0.25 to 4.5; in Nebraska, 1.5 to 3; in Missouri, 1 to 2; in Minnesota, 0.5 to 6; at Pike's Peak, Col., 12; at Salt Lake City, a trace; at Yankton, 1.

Rainy Days.—The number of days on which rain or snow has fallen averages as follows: New England, 7 to 20; Middle Atlantic States, 5 to 22; South Atlantic States, 2 to 12; East Gulf States, 3 to 17; West Gulf States, 4 to 11; Lower Lake region, 12 to 25; Upper Lake region, 9 to 18; Upper Mississippi valley, 2 to 15; Lower Missouri valley, 0 to 10; Tennessee and the Ohio valley, 7 to 21; Northwest, 0 to 6; Rocky Mountain region, 0 to 7; California, 7 to 23.

Cloudy Days.—The number reported by the volunteer observers is as follows: New England, 7 to 13; Middle Atlantic States, 6 to 24; South Atlantic States, 3 to 14; East Gulf States, 5 to 14; West Gulf States, 3 to 11; Lower Lake region, 10 to 23; Upper Lake region, 9 to 15; Upper Mississippi valley, 6 to 19; Lower Missouri valley, 5 to 13; Tennessee and the Ohio valley, 14 to 22; the Northwest, 3 to 17; Rocky Mountain region, 0 to 7; California, 1 to 6.

Precipitation from a Cloudless Sky.—At Bangor, Me., on 3rd.

RELATIVE HUMIDITY.

The average percentages of relative humidity for the month range about as follows: New England, 64 to 81; Middle Atlantic States, 62 to 84; South Atlantic States, 66 to 80; East Gulf States, 75 to 80; West Gulf States, 63 to 74; Lower Lake region, 73 to 83; Upper Lake region, 70 to 86; Tennessee and the Ohio valley, 66 to 75; Upper Mississippi valley, 66 to 80; Lower Missouri valley, 65 to 84; California coast, 61 to 75; Sacramento valley, 74 to 80. High stations report the following monthly average percentages, uncorrected for elevation: Mt. Washington, 84.7; Pike's Peak, 61.4; Cheyenne, 52.1; Denver, 52.7; Salt Lake City, 64.8; Virginia City, 62.5; Boise City, 66.2; Winnemucca, 58.0.

WINDS.

In General.—The prevailing winds, at the Signal Service Stations, are shown by arrows on chart No. III. The prevailing direction is there seen to be northwest, except in the Ohio valley, Lake region and west of the Rocky Mountains, where southerly or westerly winds predominate.

Total Movements of the Air.—The following are the largest monthly movements, as recorded at the Signal Service stations, viz: Pike's Peak, 15,734 miles; Cape Lookout, 13,602 miles; Sandy Hook, 13,494 miles; Thatcher's Island, 13,038 miles; Cape May, 12,510 miles; Barnegat, 10,595 miles; Cape Henry, 10,322 miles; Cape Hatteras, 10,287 miles; Indianola, 10,006 miles; Sandusky, 9,758 miles; Eastport, 9,340 miles; Breckenridge, 9,290 miles; Boston, 9,152 miles; Woods Holl, 9,146 miles; Philadelphia, 9,005 miles; Cheyenne, 8,981 miles; New York, 8,717 miles. *The smallest are:* Visalia, 1,869 miles; Deadwood, 2,198 miles; Salt Lake City, 2,569 miles; Lynchburg, 2,657 miles; Augusta, 2,916 miles; Eagle Pass, 2,928 miles; Boise City, 3,134 miles; San Antonio, 3,108 miles; Brackettsville, 3,010 miles; Nashville, 3,249 miles; Shreveport, 3,310 miles; Springfield, 3,441 miles; San Diego, 3,521 miles; Dubuque, 3,812 miles; Los Angeles, 3,923 miles. At Mt. Washington a continuous record has not yet been accomplished, but velocities of 100 miles and over were recorded on nine days, and the total monthly movement may be estimated at about 35,000 miles.

Special Severe Winds.—2d, Blue Blanket Plains, Dak., terrible north "blizzard";* 3d, Galveston, NW., 49 miles; 9th, Pike's Peak, NW., 90 miles, Denver, NW., 52 miles; 11th, Thatcher's Island, NE., 70 miles, Eastport, E., 64 miles, Mt. Washington, NE., 186 miles; 16th, Mare Island, Cal., SSE., 45 miles; 22d, Sandusky, NW., 50 miles; 23d, Sandy Hook, NW., 64 miles; 27th, Red Bluff, Cal., SE., 44 miles; 28th, Mare Island, 46 miles; 31st, Sandy Hook, NE., 76 miles, Cape Lookout, ESE., 120 miles, Toledo, W., 49 miles, Atlantic City, NE., 64 miles, Barnegat, E., 72 miles.

VERIFICATIONS.

Indications.—The published tri-daily weather indications have been carefully compared with the reports of the succeeding 24 hours, with the following results: The general average percentage of verifications is 83.7, that of omissions to predict 0.3. The percentages by districts are: New England, 81.6; Middle Atlantic States, 84.7; South Atlantic States, 83.9; East Gulf States, 86.4; West Gulf States, 86.5; Tennessee and the Ohio valley, 83.8; Upper Mississippi valley, 82.0; Lower Missouri valley, 82.5; Upper Lake region, 80.9; Lower Lake region, 84.9; The percentages by elements are: Weather, 88.2; Wind, 82.1; Temperature, 82.1; Barometer, 82.6. Out of 3,720 cases there were 10 omissions; 132 failures; 124 one-fourth verified; 545 one-half verified; 422 three-fourths verified; 2,487 wholly verified.

Cautionary Signals.—There have been received reports as to the verification of 176 of the "cautionary" and "off-shore" signals that have been displayed during the month. Of these 111, or 63 per cent., were verified at the stations themselves, and about 121, or 69 per cent., within one hundred miles. Two of these orders were a few minutes late. Twenty-three cases are reported in which signals would have been justified if ordered, though in but few cases did the wind exceed 30 miles.

NAVIGATION.

Stages of Water in Rivers.—In the table on chart No. III are given the highest and lowest readings on the Signal Service gauges, from which it will be seen that at no time has the danger line been reached on any of the rivers there mentioned. The highest waters in the Mississippi occurred generally from the 1st to the 12th, and the lowest from the 12th to the 18th, and in the Ohio and tributaries, the highest from the 15th to the 18th, and the lowest from the 5th to the 13th.

Ice in Rivers is reported as follows: floating ice in the Arkansas at Shreveport on the 5th; Dakota river, 31st, froze over—ice 9 inches thick; Platte river froze over on the 4th; Mayuoketa river, Iowa, 6th, frozen over first time this season; James river, Dak., closed with ice 4 inches thick throughout the month. The Missouri frozen over on the 5th at Omaha, and has since remained closed; floating ice at Plattsmouth, 1st to 3rd, and at Leavenworth from the 5th to the 8th. The Mississippi froze over at St. Paul and La Crosse on the 4th, and navigation closed; at Dubuque, 7th ice gorged; 10th, broke up; 12th, ferries commenced running again; 23rd, main channel froze over; at Davenport floating ice was reported on the 4th and 5th; river gorged and ferries withdrawn on the 6th; icebroke up on the 7th, and floating ice continued in river until the 17th; 18th, channel clear; 23rd to 25th, floating ice; 26th, channel clear; 28th to 31st, floating ice; at Keokuk, floating ice from the 8th to 17th, and 23rd, 29th and 31st; at St. Louis, floating ice from 7th to 13th. The Monongahela, Alleghany and Upper Ohio rivers froze over on the 7th; broke up on the 10th; clear on the 12th; floating ice was reported at Cincinnati on the 7th, and on the 8th, navigation was nearly suspended; on the 9th, river clear; ice in Licking river seven inches thick. At Logansport, 4th, river frozen over one and half inch thick. Illinois river, 6th, frozen over solid. The Schuylkill river froze over on the 6th, but opened on the 11th. Floating ice was reported in the Delaware, at Philadelphia, 7th to 9th. The Connecticut river, at Newbury, frozen over, 8th to 30th. The Shetucket river frozen over, 7th to 28th—floating ice in the Thames, at New London, on the 28th. The Hudson was full of floating ice on the 4th, and froze over on the 7th, broke up from the 12th to the 26th. Otsego Lake, New York, 31st, partly open. Lake Champlain, 30th, thin ice, which broke up on the 31st. Wappinger's Lake frozen over on the 1st, and again on the 28th. Sebago Lake, 31st, ice in lower bay sixteen inches thick, upper bay and Lake open. New Bedford, Massachusetts, 6th, harbor frozen over; 9th, ice breaking up. The James river froze over at Richmond on the 7th. On the Lakes ice occurred as follows: Marquette harbor, 16th, ice formed; 17th, frozen over; 21st, clear. Escanaba, 4th and 10th, shore ice. Alpena, 5th, bay and river frozen over first time this season; 14th, clear; 16th, frozen over. On Lake Michigan navigation continued uninterrupted throughout the month. Detroit, 31st, floating ice in the river. Toledo, 3d, 6th to 21st, shore ice in river; 23d, river frozen. Buffalo, 7th, the river frozen over; some ice in harbor.

TEMPERATURE OF WATER.

In General.—The temperatures of water, as observed in rivers and harbors, are shown on the chart No. III.

Maximum and Minimum Temperatures.—The highest maxima have been 70°4 at Key West; 64° at San Francisco; 60° at St. Marks and 59° at Jacksonville and Galveston. The lowest minima have

* On the Western Plains storms of wind, with driving snow, are popularly styled "blizzards."